

## SOLAR OBSERVATIONS

SOLAR AND SKY RADIATION MEASUREMENTS DURING  
AUGUST, 1924

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Investigations

For a description of instruments and exposures and an account of the method of obtaining and reducing the measurements, the reader is referred to the REVIEW for January and February, 1924, 53: 42 and 113.

From Table 1 it is seen that solar radiation intensities averaged above normal values at all three stations.

Table 2 shows that the total solar and sky radiation received on a horizontal surface averaged above normal at Washington and close to normal at Madison and Lincoln.

Skylight polarization measurements made on 14 days at Washington give a mean of 56 per cent, with a maximum of 64 per cent on the 29th. Measurements obtained on 14 days at Madison give a mean of 65 per cent with a maximum of 71 per cent on the 27th. All these figures are slightly above the average August values, with the exception of the maximum for Washington which is close to normal.

TABLE 1.—Solar radiation intensities during August, 1924

[Gram-calories per minute per square centimeter of normal surface]

## Washington, D. C.

Date	Sun's zenith distance										Local mean solar time	
	8a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°		
	75th mer. time	Air mass										
		A. M.					P. M.					
e	5.0	4.0	3.0	2.0	1.0	2.0	3.0	4.0	5.0	e		
August 5	mm.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mm.		
6	17.37					1.14				17.37		
7	20.57					1.13	0.77			16.79		
8	19.89		0.57	0.71	0.86	1.14				16.79		
9	16.79			0.76	0.99	1.26				15.11		
14	11.38			0.88	1.13	1.47	1.20	1.05	0.92	10.21		
15	9.47	0.80	0.92	1.06	1.22	1.42	1.22	1.00		9.75		
18	9.14	0.86	0.96	1.08	1.22	1.39	1.10	1.00	0.87	7.29		
19	10.21	0.72	0.86	0.97	1.11	1.25				7.87		
21	17.96				0.79					16.20		
27	13.13		0.57	0.73	0.95	1.25	1.02	0.83	0.68	13.13		
29	11.81	0.72	0.85	0.98	1.14	1.35	1.11	0.94	0.79	13.13		
30	14.60	0.71	0.82	0.92	1.10	1.33				15.66		
Means		0.76	0.79	0.90	1.05	1.28	1.01	0.88	0.73 (0.65)			
Departures		+0.10	+0.12	+0.13	+0.13	+0.06	+0.06	+0.08	+0.09	+0.03		

<sup>1</sup> Extrapolated

TABLE 1.—Solar radiation intensities during August, 1924—Contd.

## Madison, Wisconsin

Date	Sun's zenith distance											Noon	
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°			
	75th mer. time	Air mass											Local mean solar time
		A. M.					P. M.						
		e	5.0	4.0	3.0	2.0	1.0	2.0	3.0	4.0	5.0		
August 11	mm.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mm.		
12	10.97				1.22	1.45	1.25				9.47		
13	9.47				1.19						11.38		
14	10.21					1.45	1.25				7.87		
15	9.14			0.96	1.19						9.14		
16	14.10				1.13						14.60		
17	13.13			1.06	1.19						12.68		
18	15.65				1.06		1.14				17.96		
19	12.68	0.88	0.98	1.10	1.25	1.47	1.27				10.21		
20	11.38		0.95	1.06	1.19	1.37	1.22				12.68		
21	12.24		0.89	1.01	1.18	1.27	0.91				15.11		
Means		(0.88)	0.94	1.04	1.18	1.40	1.17						
Departures		+0.14	+0.10	+0.10	+0.08	+0.09	+0.11						

## Lincoln, Nebraska

August 2	15.65					1.20	1.06	0.88	0.72		16.20
3	13.61	0.75	0.84	0.96		1.40	1.00	0.78	0.59		15.11
11	12.24					1.40	1.19	1.02	0.88	0.78	14.10
13	11.81					1.02	1.36				14.10
14	14.10					1.06	1.26				16.20
16	11.38		0.74	0.88	1.05						10.97
22	10.21						1.04	0.91	0.78	0.67	9.14
25	14.60		0.81	0.95	1.14	1.38	1.07	0.88	0.75	0.68	15.11
26	14.10		0.87	1.00	1.16	1.34	1.17	1.02	0.89	0.78	11.81
27	13.61				1.18	1.33	1.11	0.93	0.78	0.69	15.11
28	13.61	0.61	0.72	0.86	1.08	1.33					14.10
Means		(0.67)	0.80	0.93	1.11	1.34	1.09	0.92	0.77	0.71	
Departures		-0.03	+0.01	+0.03	+0.03	+0.05	+0.01	+0.02	+0.01	±0.00	

TABLE 2.—Solar and sky radiation received on a horizontal surface

[Gram-calories per square centimeter of horizontal surface]

Week beginning—	Average daily radiation					Average daily departure from normal		
	Washington	Madison	Lincoln	Chicago	New York	Washington	Madison	Lincoln
	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.
July 30	458	357	406	398	395	-1	-113	-48
Aug. 6	481	400	448	285	392	+31	-55	-68
13	523	448	554	354	472	+88	+6	+59
20	329	486	558	379	305	-90	+67	+76
27	483	452	479	394	439	+78	+43	+10
Excess or deficiency on Sept. 2 since first of year						+1,107	-7,433	+2,962